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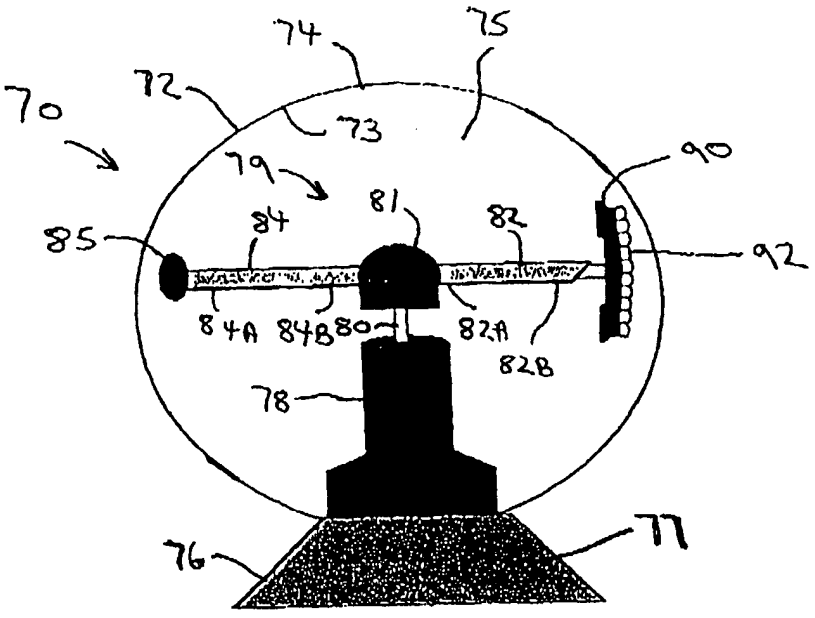
(54) Title: GAMING DISPLAY



(57) Abstract: A display for use with a gaming machine, The display has a translucent globe mounted to the gaming machine and a stepper motor mounted inside the globe (Fig. 2). An arm is mounted to the stepper motor. The stepper motor rotates the arm. Several light emitting diodes are mounted to the arm. The light emitting diodes are located adjacent to the translucent globe. The rotating light emitting diodes emit light in a predetermined sequence such that the globe when viewed by a game player appears to have a recognizable text or im age.

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GAMING DISPLAY

BACKGROUND OF THE INVENTION

1. Field of Invention

The present invention relates to a display for use with a gaming machine that provides an entertaining image to a game player.

2. Description of Related Art

Gaming devices are well known in the art and a large variety of gaming devices have been developed. In general, gaming devices allow users or players to play a game. In many casino-type gaming devices, the outcome of the game depends, at least in part, on a randomly generated event. For example, a gaming device may use a random number generator to generate a random or pseudo-random number. The random number may then be compared to a predefined table to determine the outcome of the event. If the random number falls within a certain range of numbers on the table, the player may win a predefined prize. The table may also contain display information that allows the gaming device to generate a display that corresponds to the outcome of the game. The gaming device may present the outcome of the game on a large variety of display devices, such as mechanical spinning reels or video screens.

Some gaming devices award bonuses in a bonus game in addition to prizes that are awarded in the primary game. A bonus can be defined as an additional prize that is awarded to the player when a predefined event occurs. A bonus display in conjunction with a bonus game should be visually appealing and stimulate player interest.

Highly visible displays are utilized on gaming machines in order to attract players.

Once players are attracted to the gaming machine, they tend to play longer because the display enhances the stimulation and excitement experienced by the game player. It is desirable for gaming machines to incorporate highly visible display devices.

Gaming displays are more successful if they stimulate one or more ofthe human senses. Players are attracted to games that use flashing lights and sounds. Displays that arouse the human senses are more stimulating to a game player and as a result are played for longer periods of time. This results in increased revenue for the gaming operator. One of the mediums used in display devices to attract the attention of players is light. Many casino games have flashing lights.

While lights have been used in conjunction with gaming displays, a current unmet need exists for a gaming display that utilizes light to produce an image that is entertaining, attractive and yet distinctive from other displays.

SUMMARY OF INVENTION

1. Advantages of the Invention

One of the advantages of the present invention is that it provides a gaming device that utilizes a highly visible display.

A further advantage of the present invention is that it provides a display that may be used with a primary game or a bonus game.

Another advantage of the present invention is that it provides a display that utilizes rotating light emitting diodes.

Another advantage of the present invention is that it provides a display that generates a recognizable image.

A further advantage of the present invention is that it provides a display that generates a movable image.

Another advantage of the present invention is that it provides a display that is attractive and entertaining to game players.

These and other advantages of the present invention may be realized by reference to other portions of the specification, claims, and abstract.

2. Brief Description of the Invention

The present invention comprises a display for use with a gaming machine. The display includes a globe mounted to the gaming machine and a stepper motor mounted inside the globe. An arm has a distal end and a proxil end. The proxil end is mounted to the stepper motor. The stepper motor rotates the arm. A light-emitting device is mounted to the distal end of the arm. The light emitting device is located adjacent the globe. The light-emitting device is adapted to emit light in a predetermined sequence such that the globe, when viewed by a game player, appears to have a recognizable image.

The above description sets forth, rather broadly, the more important features of the present invention so that the detailed description of the preferred embodiment that follows may be better understood and contributions of the present invention to the art may be better appreciated. There are, of course, additional features of the invention that will be described below and will form the subject matter of claims. In this respect, before explaining at least one preferred embodiment of the invention in detail, it is to be understood that the invention is not limited in its application to the details of the construction and to the arrangement of the components set forth in the following description or as illustrated in the drawings. The

invention is capable of other embodiments and of being practiced and carried out in various ways. Also, it is to be understood that the phraseology and terminology employed herein are for the purpose of description and should not be regarded as limiting.

BRIEF DESCRIPTION OF THE DRAWINGS

Preferred embodiments of the present invention are shown in the accompanying drawings wherein:

Figure 1 is substantially a front view of a gaming machine.

Figure 2 is substantially a cross-sectional view of the gaming display of the present invention.

Figure 3 is substantially a front view of the gaming display of figure 2.

Figure 4 is substantially a front view of the gaming machine of figure 1 with the addition of a decorative front panel.

DESCRIPTION OF THE PREFERRED EMBODIMENT

As seen in figures 1-4, the present invention comprises a gaming machine, generally indicated by reference number 20. Gaming machine 20 comprises a primary game 21, a bonus game 40 and a display 70.

Bonus game 40 is mounted on top of a primary game 21. Primary game 21 may be any of a large number of devices that are adapted to allow a game player to play a game. For example, primary game apparatus 21 may utilize spinning reels 28 with a payline 30 or a video display (not shown) to display outcomes of the game. A button 25 may be provided to select a winning outcome such as in a video poker game. Means may also be provided for

accepting wagers, such as a coin slot 24 and for awarding prizes, such as a coin dispenser 26. A handle 22 is provided for activating game 20 to begin a game. Primary game 20 may be a conventional slot machine game.

Bonus game 40 is mounted on top of a primary game 21. Bonus game 40 can be almost any bonus game that awards a prize in a separate bonus game. Bonus game 40 is activated in response to a bonus-qualifying event. A special symbol 32 on payline 30 of the primary game can be used to indicate that a bonus-qualifying event has occurred. Bonus game 40 provides a game player with an opportunity to win larger prizes and to play another game that is different and stimulating. Bonus game 40 has a housing 42 that defines an internal cavity 43 and a floor 44. A front panel 46 covers cavity 43 except for display 70.

A power supply 50 is mounted in cavity 43. Power supply 50 would be connected to a source of AC power (not shown). Power supply 50 is connected to stepper motor driver 55 and controller 56 by a cable 52. Power supply 50 provides a DC supply voltage. Controller 56 is mounted to housing 42 and is connected to stepper motor driver 55 and display 70 by a cable 57. Controller 56 can also be in communication with a controller (not shown) that is located in primary game 21. A cable 57 connects display 70 to stepper motor driver 55.

A display 70 is mounted inside cavity 43. Display 70 comprises a globe 72, an inner surface 73, an outer surface 74, a cavity 75, a base 76, a stepper motor 78 and a rotating light emitting diode assembly 79.

Display 70 has a translucent or partially transparent spherical globe 72 that is adapted to hold a rotating light emitting diode assembly 79 inside cavity 75. Globe 72 is mounted on a base 76 that in turn is mounted on floor 44. Globe 72 has an inner surface 73 and an outer surface 74 that define a cavity 75. Globe 72 is at least partially transparent such that a game

player may view the light emitted by the rotating light emitting diode assembly 79. The globe can be mounted such that it can be viewed all around or may be mounted such that is partially viewable around the circumference of the globe. In figure 4, the globe protrudes from the decorative front panel. Globe 72 is made of a transparent material, such as plastic or glass. In the preferred embodiment, globe 72 is made of acrylic. Globe 72 may have many different shapes, such as a sphere, cube, cylinder, triangle, etc. In the preferred embodiment, globe 72 is substantially spherical with a planar end 77. Globe 72 may have decorative indicia placed on it. The decorative indicia may be partially transparent. For example, in figure 4 the hands of a fortuneteller are silk screened onto the globe. Even though display 70 is shown in conjunction with a bonus game 40, it is contemplated that globe 72 can be used with a primary game such as a slot machine.

A stepper motor 78 is mounted to inside globe 72. Stepper motor 78 is preferably a conventional DC stepper motor that is available from a number of well-known suppliers. Stepper motor 78 is connected by cable 57 to stepper motor driver 55. Stepper motor driver 55 can control the rotational speed of motor 78.

Rotating light emitting diode assembly 79 is contained inside globe 72. Rotating light emitting diode assembly 79 comprises a post 80, hub 81, arms 82 and 84, a light emitting diode holder 90 and light emitting diodes 92. Post 80 is mounted to stepper motor 78. Hub 81 is mounted to post 80 and to arms 82 and 84. Arm 84 has one proxil end 84B mounted to hub 81 and another distal end 84A mounted to a counterweight 85. Arm 82 has one proxil end 82A mounted to hub 81 and another distal end 82B mounted to light emitting diode (LED) holder 90. LED holder 90 contains several light emitting diodes (LED's) 92. LED's 92 can be one color or wavelength of LED or can be mixture of colors. LED's 92 are

electrically connected to controller 56. Controller 56 is operable to turn on and off LED's 92 while they are rotating such that a recognizable text or image 94 is viewable or appears on globe 72 to a game player. Counterweight 85 insures that assembly 79 will be balanced when rotating. While light-emitting diodes 92 were shown mounted to holder 90, it is contemplated to that lasers, incandescent lights, fluorescent lights and almost any kind of light could also be used. While the light emitting diodes were show mounted in a round globe 72, they could also be used in conjunction with a flat surface.

During operation, the LED's 92 are rotated at a high rate of speed by the stepper motor 78. Light from the LED's is projected on to the translucent globe 72. The light emitted from the LED's can be turned on and off by controller 56 in such a sequence that the projected light is identifiable by an onlooker as text or a recognizable image 94. The motor rotates at a speed that is fast enough for the human eye to see a clear image due to light persistence on the human eye. Light persistence of the human eye causes an optical illusion of an image to be perceived as continuously viewable over the entire sweep of the LED's even though at any given instant, only a small portion of the image is actually being produced. The LED's are rotating faster than the visual discrimination time of the human eye. Text or image 94 may be stationary or can be made to move by turning on and off LED's 92 in the proper sequence. The text or image can be made to revolve 360 degrees entirely around the globe. The more LED's that are used and the higher rate of speed that is used provide a higher resolution image. High-resolution images such as those found on a television can be obtained with the rotating LED's.

The purpose of display 70 is to attract and entertain players to a slot machine. The unique presentation on globe 72 when mounted to a gaming machine 20 stands out from other

gaming devices in a casino. When display 70 is operated, it produces a vivid display that attracts the attention of people nearby and provides an exciting display for players playing gaming device 20.

Turning to figure 4, a specific game is shown using display 70. A decorative front panel 46 with a fortuneteller theme is mounted over cavity 43. Hands on the globe 72 make it appear that a fortuneteller is holding onto and looking into a crystal ball. The globe 72 protrudes from panel 46 to provide a more unusual display that stands out to game players. In figure 4, when a player obtains a bonus-qualifying symbol 32 in primary game 21, globe 72 displays messages and jackpot amounts to the player. The player is prompted to select one of twelve buttons 47 that is associated with their astrological sign. Based upon the astrological sign selected, display 70 shows the selected astrological sign. Next, the bonus gameselects a bonus amount to be awarded to the player. The bonus amount won is displayed on display 70. The astrological sign and bonus amount can be made to rotate around the globe. A speaker can announce the bonus amount won to the player, if desired. The bonus is then awarded to the player.

In another game embodiment, translucent globe 72 can be mounted to a primary game with an African theme. Display 70 can show African animals such as lions and elephants in motion walking or running around the globe. When a player wins, the amount won can be displayed on globe 72. Other game themes could be used, for example, the player could be prompted to select a fortune category to hear their fortune about. The categories could be fame, luck, career, wealth, love and sex. An image associated with each fortune could be displayed on globe 72.

CONCLUSION

It can now be seen that the present invention solves many of the problems associated with the prior art. The present invention provides a lighted display that is attractive and entertaining for use with a primary game or a bonus game. The present invention provides a display that utilizes a rotating array of light emitting diodes within a translucent globe to produce a recognizable moving image that is visually appealing and unusual. The present invention provides a display that creates images that attract attention to a gaming machine such as a slot machine. Although the description above contains many specifications, these should not be construed as limiting the scope of the invention but as merely providing illustrations of some of the presently preferred embodiments of this invention. Thus, the scope of the invention should be determined by the appended claims and their legal equivalents rather than by the examples given.

CLAIMS

What is claimed is:

1. A display configured to be used with a gaming machine, the display comprising:

(a) a globe mounted to the gaming machine, the globe defining a cavity therein;

(b) a stepper motor mounted in the cavity;

(c) a post mounted to the stepper motor;

(d) an arm having a first end and a second end, the first end mounted to the post;

(e) a plurality of light emitting diodes mounted to the second end of the arm, the light emitting diodes being located adjacent the globe, the light emitting diodes being adapted to emit light; and

(f) a controller in communication with the stepper motor and the light emitting diodes, the controller being configured to cause the stepper motor to rotate the arm and to cause the light emitting diodes to emit light in a predetermined sequence, the arm rotating at such a rate so as to cause recognizable text and images to be viewable through the globe by the player.

2. The display of claim 1 wherein the light emitting diodes are configured to emit lightin a plurality of wavelengths.

3. The display of claim 1 wherein the plurality of light emitting diodes comprises a first and second light emitting diode, wherein the controller is configured to cause the first light emitting diode to emit light at a different time than the second light emitting diode.

4. The display of claim 3 wherein the first light emitting diode is configured to emit light in a different wavelength than the second light emitting diode.

5. The display of claim 1 wherein the globe is substantially spherical.

6. The display of claim 1 wherein the display is mounted to a slot machine.

7. The display of claim 1 wherein a decorative panel surrounds the display.

8. The display of claim 1 wherein the light emitting diodes are mounted in a holder.

9. The display of claim 1 wherein the controller is adapted to move the text or images around the globe.

10. The display of claim 1 wherein the globe is translucent.

11. The display of claim 1 wherein a stepper motor driver is in communication with the stepper motor, the stepper motor driver in communication with the controller.

12. The display of claim 1 wherein the globe displays an astrological sign.

13. A display configured to be used with a gaming machine, the display comprising:

(a) a translucent globe mounted to the gaming machine;

(b) a stepper motor mounted inside the globe;

(c) an arm mounted to the stepper motor, the stepper motor adapted to rotate the arm; and

(d) a light emitting device mounted to the arm, the light emitting device being located adjacent the globe, the light emitting device being adapted to emit light in a predetermined sequence such that the globe when viewed by a game player appears to have a recognizable image.

14. The display according to claim 13 wherein the light-emitting device is a plurality of light emitting diodes.

15. The display according to claim 13 wherein the light-emitting device is a plurality of lasers.

16. The display according to claim 13 wherein the light-emitting device is a plurality of incandescent lights.

17. The display according to claim 13 wherein the light-emitting device and the stepper motor are in communication with a controller, the controller being adapted to cause the stepper motor to rotate the arm and to cause the light emitting device to emit light in the

predetermined sequence.

18. The display according to claim 17 wherein the arm rotates at a rotational rate that makes the image recognizable by the game player.

19. The display according to claim 18 wherein the controller can change the rotational rate.

20. The display according to claim 14 wherein the light emitting diodes are configured to emit light in a plurality of wavelengths.

21. The display according to claim 13 wherein the globe is substantially spherical with a planar end.

22. The display according to claim 13 wherein the display is mounted to a slot machine.

23. The display according to claim 21 wherein the planar end is mounted on a base.

24. The display according to claim 13 wherein a counterweight is attached to the arm to keep the arm balanced.

25. The display according to claim 13 wherein a post is mounted to the stepper motor and a hub is mounted to the post, the arm having a proxil end mounted to the hub and a distal end mounted to the light emitting device.

26. The display of claim 17 wherein the controller is adapted to move the text or images on the globe.

27. The display of claim 13 wherein a plurality of astrological signs are displayed on the gaming machine, the gaming machine allowing a player to select one of the astrological signs, the globe displaying the selected astrological sign.

28. The display of claim 27 wherein the astrological signs are displayed on a plurality of selector buttons mounted on the gaming machine.

29. A method of providing a display for a gaming device comprising:

(a) providing a globe mounted to the gaming device, the globe having a cavity;

(b) providing a plurality of light emitting diodes mounted to an arm in the cavity, the arm mounted to a stepper motor;

(c) rotating the arm with the stepper motor; and

(d) turning the light emitting diodes on and off in a predetermined sequence, the arm rotating at such a rate so as to cause a recognizable image to be viewable through the globe by a player.

30. The method of claim 29 wherein the arm rotates at a rotational rate that is greater than the visual discrimination time of a human.

31. The method of claim 29 wherein the light emitting diodes emit light in a plurality of wavelengths.

32. The method of claim 29 wherein the recognizable image moves on the globe.

33. The method of claim 29 further comprising:

a) allowing the player to select an astrological sign;

b) displaying the astrological sign on the globe;

c) generating a prize; and

d) awarding the prize to the player.

34. The method of claim 33 wherein the prize is displayed on the globe.

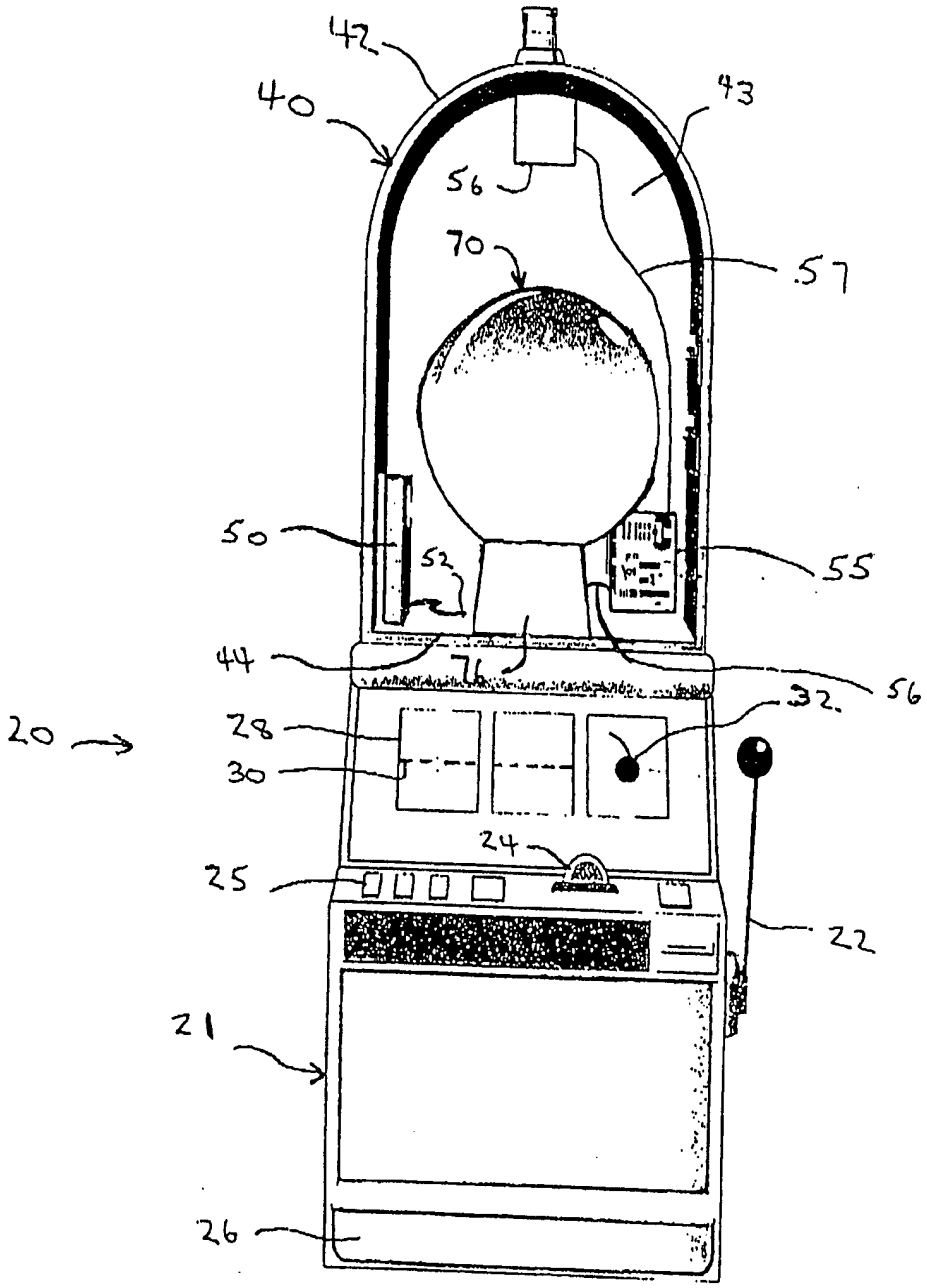

FIG. 1

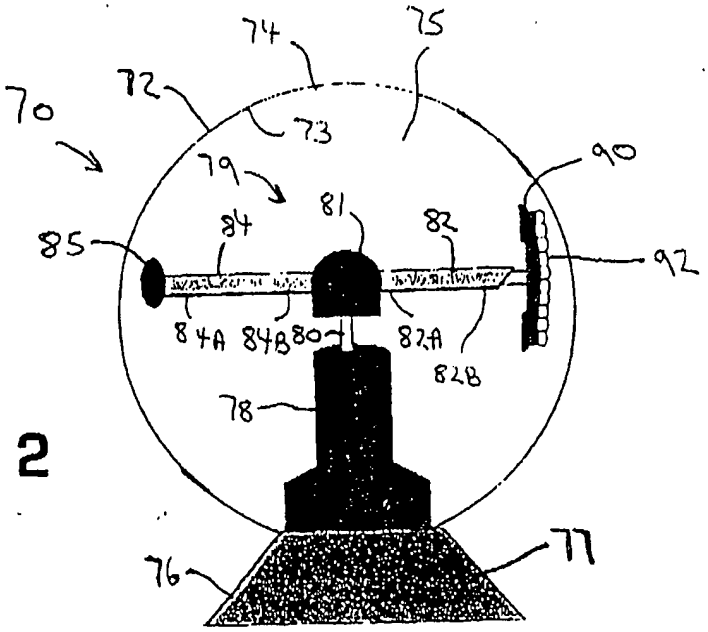
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FIG. 2

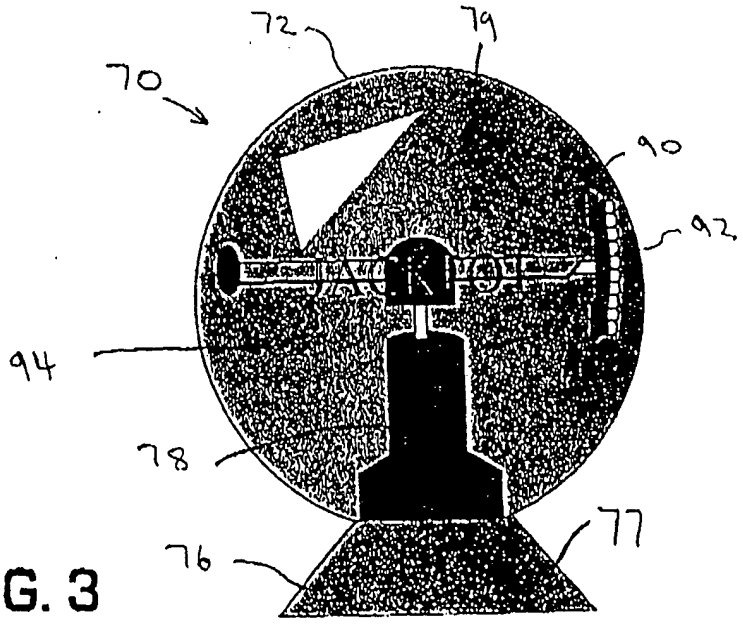
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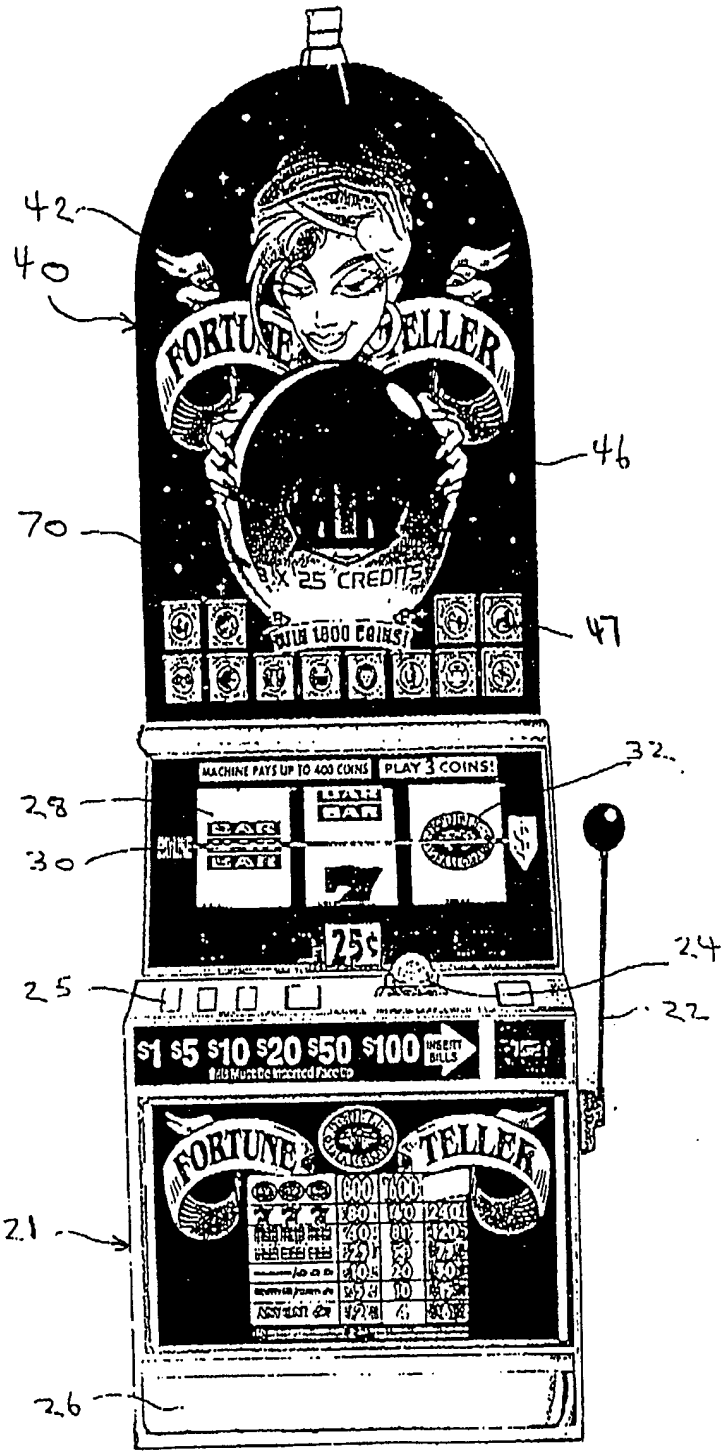
FIG. 3

FIG. 4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FORTUNE TELLER
MACHINE PAYS UP TO 400 COINS
PLAY 3 COINS
$1 $5 $10 $20 $50 $100
INSERT BILLS
FORTUNE TELLER

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US02/27830

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : A63F 13/00
US CL : 463/31

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
U.S. : 463/22, 25, 30, 31, 32, 33, 34, 36, 37, 38

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
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C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y, P	US 6,302,790 B1 (BROSSARD) 16 October 2001 (16.10.2001), see entire document.	1-34
Y	US 6,265,984 B1 (MOLINAROLI) 24 July 2001 (24.07.2001), see entire document.	1-34
Y	US 4,457,580 A (KLOSE) 03 July 1984 (03.07.1984), see entire document.	1-34
Y	US 5,748,157 A (EASON) 05 May 1998 (05.05.1998), see entire document.	1-34
Y	US 5,670,971 A (TOKIMOTO et al) 23 September 1997 (23.09.1997), see entire document.	1-34
Y	US 6,278,419 B1 (MALKIN) 21 August 2001 (21.08.2001), see entire document.	1-34

☐ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

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